

December 2002

Subject: Coos Bay Barge Offloading Platform Access RM 2.5, Tier I Sediment Evaluation, Determination of Suitability

Abstract

This Tier I evaluation was conducted following procedures set forth in the Inland Testing Manual (ITM) and the Ocean Disposal Testing Manual (Green Book), developed jointly by the Corps and EPA to assess dredged material. Guidelines used are those developed to implement the Clean Water Act (CWA) and the Marine Protection, Research and Sanctuary Act (MPRSA). The methodology used are those adopted for use in the Dredge Material Evaluation Framework (DMEF) for the Lower Columbia River Management Area, November 1998.

This Tier I evaluation of the proposed dredge material from this project indicates that the material is acceptable for both unconfined in-water and upland disposal. No significant, adverse ecological impacts are expected from such disposal in terms of sediment toxicity. Further, the proposed project meets the "No Test" volume for small projects as provided in DMEF Section 6.6.4 and Table 6-2.

Introduction

The purpose of this report is to present information used in a Tier I evaluation of 800-1000 CY of material to be dredged in order to provide access to a barge offloading area at Coos Bay River Mile 2.5 (See Figure 1 and 2). Access is needed to provide an offloading platform for stone to be used to for emergency repair of a breach in the north jetty at Coos Bay. Dredged material will be sidecast along the shore next to the off-loading platform.

ANALYSIS OBJECTIVES

The sediment characterization program objectives and constraints are summarized below:

- Characterize sediments to be dredged for evaluation of the potential for unacceptable environmental impact.

Historical Data

Coos Bay has had extensive sediment evaluation sampling events. The following historical events include samples collected for operation and maintenance (O&M) channel deepening, TBT studies and permit dredging. Sediment quality reports produced by the Portland District can be viewed at <http://www.nwp.usace.army.mil/ec/h/hr/>.

Corps Sampling Events:

1980 September - Sediments were subjected to elutriate and bulk chemical, benthic and physical analyses from the Coos River navigation channel at river mile (RM) 0.0 of its main stem and RM 7.5 on South Fork Coos River. Water from the same locations was collected for use in performing tests and was chemically analyzed for comparison with the sediment elutriates data.

1986 May - Sediment samples (3) from Isthmus Slough were collected using a vibrator and subjected to physical analyses.

1987 September - Sediment samples (3) were collected from Isthmus Slough at the same locations sampled in May 1986 using a gravity corer. Sediment samples were subjected to bulk chemical and physical analyses. The bulk chemistry included TOC, metal, PAH and pesticide/PCB analysis. No PAHs or pesticides/PCBs were detected, all metals were below concern levels and the material to be dredged was determined to be suitable for unconfined in-water disposal.

1989 June - Sediment samples were collected from 21 stations from RM 0.0 to RM 15 along the main Coos Bay Federal Channel Deepening Reconnaissance Study. All Samples were subjected to physical analyses while the finer grained sediments collected above RM 10.5 were also analyzed for bulk chemistry. The bulk chemical analyses included TOC, metals, PAHs and pesticide/PCBs. All the material to be dredged was determined to be suitable for unconfined in-water disposal.

1993 April - Sediment samples were collected and analyzed from the main federal navigational channel, a proposed expansion of the RM 12 turning basin, and various locations along the sides of the main channel. These samples were collected and analyzed for three purposes: 1. Sediment quality evaluation of the Isthmus Slough sediments, 2. Sediment quality evaluation of the material to be removed by expanding the RM 12 turning basin as part of the proposed channel deepening, and 3. Project wide TBT evaluation. All project sediments were found to be suitable for unconfined in-water disposal.

1994 July - Sediment samples (10) were collected along two transects and evaluated for metal and TBT contamination to satisfy questions raised by Oregon's DEQ. DEQ had information on TBT and metal contamination at Hilstrom Marine (RM 13+40) and Mid-coast Marine (RM 15) in the Isthmus Slough Area of the bay. DEQ was concerned that deepening the channel would cause slumping of contaminated material into the channel. At Hilstrom the analyses showed that the TBT contamination dropped dramatically towards the channel. At Mid-coast marine contamination was not as high, but mid-channel sediments were found to contain 150ppb TBT. This was above the bulk sediment screening level of 30 ppb used by EPA, Region 10. Additional evaluation (biological) would be needed prior to the estimated 1200 cy of dredging material at the upper end of the federal project.

1995 May - Three sediment samples were collected from the Federal Channel in the area of TBT contaminated sediment identified in July 1994 (RM 15) for physical, chemical

and biological evaluations. Chemical testing included analyses for butyltin (TBT) and PAHs. Two bioassays, the 10 day amphipod *Rhepoxynius abronius* and 48 hour oyster larval *Crassostrea gigas*, were conducted along with a 28 day benthic worm *Nephtys caecoids* bioaccumulation study. Based upon the chemistry and the bioassay; results, the material from the Federal Channel was determined to be suitable for unconfined in-water disposal. Of particular concern in Coos Bay is the presence of TBT in some areas associated with past marine boat repair. DEQ's apparent main concern is that dredging operations are resuspending TBT contaminated sediments and thereby shellfish are being contaminated. After extended discussions with various persons at DEQ the 1,200 cubic yards of material in question was dredged and placed in ODMDS H with the previous 600,000 cubic yards dredged from Isthmus Slough in 1995.

1998 August – Sixteen sediment samples were collected in Coos Bay and Isthmus Slough, August 11-12, 1998. All 16 samples were sent to Sound Analytical Services, Inc. laboratory in Tacoma, WA, for physical analyses. Eleven samples were selected for the following chemical analyses: metals, total organic carbon (TOC), pesticides/polychlorinated biphenyls (PCBs), phenols, phthalates, chlorinated organic compounds, miscellaneous extractables, and polynuclear aromatic hydrocarbons (PAH). Nine stations were sampled for tributyltin (TBT). The median grain size for all sediment was 0.18mm, with 29.2% fines. No chemicals of concern were detected above the established screening level (SL).

1999 July – Fifteen sediment samples were collected in Coos Bay, from Charleston and the entrance channel, to the confluence of Coos River on July 1, 1999. This round of samples was collected as a follow-up to the 1998-sampling event after the petroleum spill from the ship, New Carrissa, north of the entrance channel. All 15 samples were sent to Sound Analytical Services, Inc. laboratory in Tacoma, WA, for physical analyses and a Total Petroleum Hydrocarbon – Hydrocarbon Identification (TPH-HCID) screen. The TPH-HCID analysis was selected to detect free petroleum product, in the form of “tar balls”, that might have migrated into the bay. If any free petroleum product was detected, a follow-up Polynuclear Aromatic Hydrocarbon (PAH) analysis was to be carried out. No hydrocarbons were detected; indicating no free product was present in the sample. The median grain size for all sediment was 0.23mm, with 93.2% sand, 6.1% fines and 1.47% volatile solids.

Other Sampling Events and studies (includes joint-Corps and non-Corps projects):

1991 – 1997 Oregon International Port of Coos Bay and Dock Owner Permittees studies have submitted a total of 70 samples for various analyses including a TBT study.

1992 – DEQ on several dates collected 19 (includes QA/QC) samples throughout the Bay for TBT analysis.

1993 – DEQ submits 35 samples (includes QA/QC splits) to different labs for TBT analysis.

1993 – DEQ collected 2 samples from Marshfield Channel Dredge Placement Area.

1993 – A joint effort by COE, EPA, DEQ collected 16 (includes QA/QC) samples which were submitted for TBT analysis.

1994 – COE & DEQ shipped samples to different labs as part of the Channel Deepening Study submitting a total of 17 (includes QA/QC) samples for analysis (TBT, metals, AVS and TOC and Bioassay).

1995 – A joint TBT study by COE & EPA analyzed 17 (includes QA/QC) samples.

1996 – Roy F. Weston, Inc. assessed TBT concentrations at 4 locations in Coos Bay for an EPA sponsored study requested by DEQ. TBT tissue concentration analyses of various fish and shellfish were conducted by DEQ from 1992 – 1994 at various sites throughout Coos Bay and it's surrounding sloughs and inlets. Bioaccumulation results showed 87.3% of the tissues were non-detect for TBT. Those that showed levels of TBT were less than (<) 2mg TBT/kg body weight (dry). Chronic effects levels for species of concern typically fall within a range of 2-12 mg TBT/kg body weight, with a median value of about 4 ppm (literature cited in the DMEF, page 8A-6).

1998 - This round of TBT sampling was initiated as an ongoing response to concerns by DEQ that deepening of the channel would cause "slumping" of contaminated material into the channel. The sampling for TBT was designed to target the sights of concern. A crosssection sampling of the Federal Channel (mid-channel and near-shore) was taken at both major sites of concern (Mid-Coast-RM 13+40 and Hilstrom-RM 15). A total of 9 stations were sampled and submitted for TBT. Only 2 (both at Hilstrom) of the 9 stations indicated the presence of a butyltin compound (monobutyltin). The level of the highest concentration of monobutyltin was 43.3% of the SL. All material was acceptable for unconfined open water disposal. The Corp of Engineers regularly monitors sediment quality within Coos Bay navigational channel prior to dredging and disposal operations to insure compliance with all Federal and State regulations and guidelines for unconfined in-water disposal. All material discharged in open water has met criteria under these regulations and guidelines.


Conclusion

This evaluation was completed by and/or reviewed by the Regional Management Team (EPA, COE, DEQ, FWS). The undersigned find and concur that this Tier I evaluation of the proposed dredge material from this project indicates that the material is acceptable for both unconfined in-water and upland disposal. No significant, adverse ecological impacts are expected from such disposal in terms of sediment toxicity. Further, the proposed project meets the "No Test" volume for small projects as provided in DMEF Section 6.6.4 and Table 6-2.



Mark D. Siipola
Corps

Date

 11 Dec 2002

John Malek
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Date

Tom Melville
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Date

Siipola, Mark D NWP

From: MELVILLE Tom [MELVILLE.Tom@deq.state.or.us]
Sent: Friday, December 06, 2002 3:29 PM
To: Siipola, Mark D NWP
Subject: Coos Bay North Jetty Emergency Repair: Tier 1 analysis of Mark,

Should it be necessary to dredge sediments to facilitate barge access to accomplish the Coos Bay North Jetty Emergency Repairs, those sediments will be evaluated. If the Tier 1 sediment evaluation consistent with the DMEF, 1998, shows them to be exclusionary, I am prepared to concur with your evaluation.

Tom

Tom Melville
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12/11/2002

References

U.S. Army Corps of Engineers, Portland District, Seattle District, U.S. Environmental Protection Agency, Region 10, Oregon Department of Environmental Quality, Washington State Department of Natural Resources. April 1998 (draft document). Dredge Material Evaluation Framework Lower Columbia River Management Area.

U. S. Environmental Protection Agency and U. S. Army Corps of Engineers. February 1998. Evaluation of Dredged Material Proposed for Ocean Disposal – Testing Manual, (referred to as the “The Green Book”).

U. S. Environmental Protection Agency and U. S. Army Corps of Engineers. February 1991. Evaluation of Dredged Material Proposed for Discharge in Inland and Near Coastal Waters –Testing Manual, dated (referred to as the “Inland Testing Manual”).

Britton, J., U.S. Army Corps of Engineers, Portland District. May 1990. Results of Coos Bay Empire turning basin Sediment Quality Evaluation.

Britton, J., U.S. Army Corps of Engineers, Portland District. Aug 1993. Tributyltin levels in Coos Bay Sediment.

Britton, J., Siipola, M., U.S. Army Corps of Engineers, Portland District. Oct 1994. Supplemental TBT Data Coos Bay Channel Deepening Project.

Sherman, T., U.S. Army Corps of Engineers, Portland District. September 1998. Coos Bay Sediment Evaluation Report.

Sherman, T., U.S. Army Corps of Engineers, Portland District. July 1999. Coos Bay Sediment Evaluation Report.

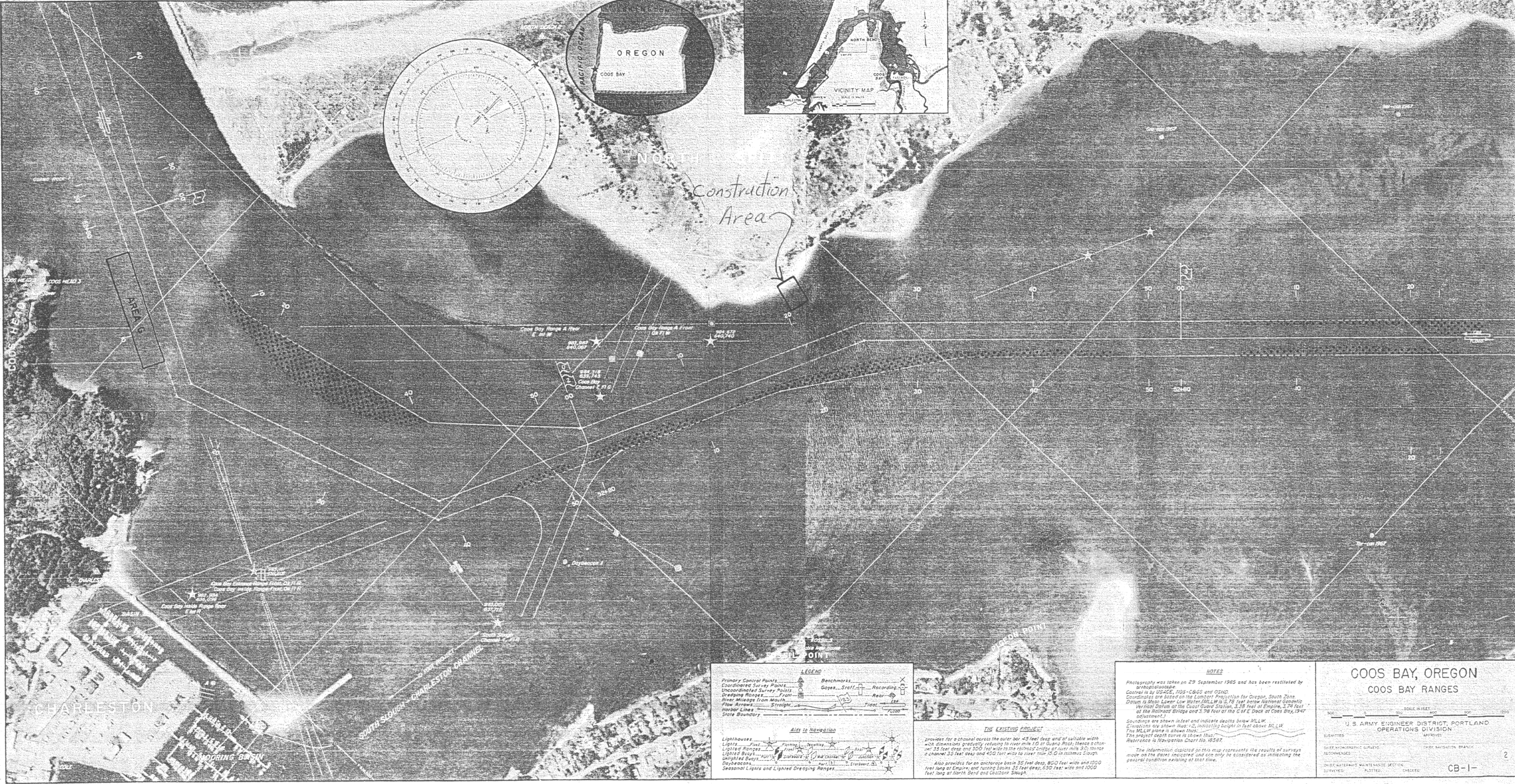


Fig. 1

